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CARRÉ'S APPARATUS FOR MAKING ICE.

By The Editor.

In the March number of this Journal for 1870, we gave an account of this machine without the ability to illustrate it by engravings. Since then Mr. Bujac has had drawings made and engraved, which enables us to recur to the subject so far as to present the engravings to our readers with a repetition of the description, rendered necessary by the absence of the letters of reference to the several parts in our former notice. By comparing the letters in figures 1 and 2 with those in the vertical view, fig. 3, the reader will readily get a correct idea of the relation of the parts of the apparatus. Fig. 1 is an end view, in section, the observer looking from the right hand end of the machine, as seen in fig. 2 toward the left, so as to see under the platform which supports the freezing cistern, and which is supported on four iron columns. The really scientific character of this machine, and the beautiful manner in which it illustrates the practical application of the laws of latent heat, is our excuse for again occupying space with it; besides, as it is quite possible to construct a miniature arrangement by which cold could be commanded at pleasure, some application of the principle may hereafter be made subservient to the uses of the pharmaceutist.

"Mr. Carré's invention consists in the use of ammoniacal gas, liquefied by pressure, as his agent for freezing water, which it does by abstracting and rendering latent the heat necessary to the liquid condition of the water. The manner of using the aqua ammoniæ to effect this purpose is exceedingly ingenious, and apparently paradoxical, inasmuch as 'HEAT IS APPLIED TO PRODUCE COLD;' 'FIRE TO MAKE ICE;' and this is one of the claims of originality made by the patentee, who also claims 'THE APPLICATION OF THE POWER OF ABSORPTION DUE TO MUTUAL AFFINITY AS A MEANS OF PRODUCING VACUUM, VOLATILIZATION,

THE REMOVAL OF HEAT, AND THE CONSEQUENT PRODUCTION OF COLD.'" It may be premised that the form of ammonia used is the concentrated aqua ammoniæ, containing 26 per cent. of gaseous ammonia, and that there is a constant pressure in the apparatus, when in full operation, varying from 8 to 13 atmospheres, equal to about 120 to 200 lbs. to the square inch.

"The apparatus consists (1) of a cylindrical, dome-topped, vertical BOILER, A, into which the aqua ammoniæ is introduced, part of which enters the *exchanger*, the *complement* and the *absorption vase*, to be described. A large tube B, issuing from the dome connects it with (2) the LIQUEFACTOR, C, (fig. 2) which is an extensive series of connected tubes, nearly horizontal, contained in a sheet-iron tank D, filled with cold running water. In this the gas, under the pressure and the cold, is liquefied, its latent heat being carried off by the cold water, whilst the liquefied ammoniacal gas passes out at the lowest end by a small tube E, into (3) the RECIPIENT, F, where it collects. This vessel is connected by a tube with (4) the DISTRIBUTING VALVE, G, through which the liquefied ammoniacal gas expands into four stacks of zig-zag tubes H, contained in the FREEZING CISTERN, I. The freezing cistern consists of a wooden tank lined with iron, in which are placed four lines of zigzag tubes, above noticed, into which the liquefied ammoniacal gas enters from the distributing valve. Between these tubes, twenty-four metallic cans, or freezers, filled with water are placed, and the whole interior of the tank is filled with a bath of strong brine, or, preferably, solution of chloride of calcium, which is incapable of being frozen by the temperature produced, and is made to circulate between the tubes and freezing cans, J, J, by a stirring apparatus, K. These stacks of zigzags connect at bottom with a cylindrical tube called the COLLECTOR, L. When now the distributing valve is partially opened, the liquefied ammoniacal gas is forced in due proportion into the zigzag tubes, where it rapidly expands into gas by the assumption of the heat necessary for its vaporization from the surrounding brine, which in its turn abstracts the heat from the water in the cans, (by virtue of which only it can retain its fluidity), and thus converts it into ice, and accomplishes the chief purpose of the machine. But the apparatus, acting continuously, now gathers the resulting ammoniacal gas, redissolves it in the weak aqua ammoniæ of the boiler which it has previously abstracted and cooled, and then returns it to the boiler to be again deprived of its gas. This remarkable compound result is effected in this wise: The ammoniacal gas, after performing its office of rendering latent the sensible heat of the water, passes on, first to the COLLECTOR, L, and from this through a tube, to the ABSORPTION VASE, M, (fig. 2, which consists of a cylindrical vessel enclosing a tall coil of tube, N, N, through which passes a constant current of cold water), and there, after the machine has been working some time, it meets with the exhausted aqua ammoniæ, by which it is rapidly absorbed, and which thus regains its original strength. The manner in which the weak aqua ammoniæ reaches the absortion vase M, and the regenerated aqua ammoniæ is returned to the boiler A, all of which has been effected under pressure varying from 8 to 13 atmospheres, is as follows: By a tube O, reaching from the bottom of the boiler, the latter is connected with the coil of the EXCHANGER, P, which con-

sists of a cylindrical iron vessel R, about 16 inches in diameter. The lower end of the exchanger coil P, is connected with the lower end of another coil in a similar vessel beside it, called the COMPLEMENT, S, (fig. 1) the upper end ofwhich complement coil T, enters the absorption vase M (fig. 2), at the top, and descends nearly to the bottom.

"At first the boiler, exchanger, complement, and absorption vase, are charged with aqua ammoniæ, but as soon as the heat from the boiler coil U, (fig. 1) has driven off sufficient gas to create strong pressure, the weakened hot aqua ammoniæ is forced from the boiler A, into the coil of the exchanger P, where it is partially cooled by the cold aqua ammoniæ of the absorption vase M, which the pump V, (fig. 2) has forced into the cylinder of the exchanger P, ready to replace the weak aqua ammoniæ in the boiler A. The weak aqua ammoniæ is then perfectly cooled as it passes through the complement coil T, which is surrounded by cold water, and it (the weak aqua ammoniæ) enters the absorption vase M, rapidly absorbing the gas entering from the collector L, thus reproducing aqua ammoniæ. Simultaneously, the forcing pump V of the machine is drawing the cool strong aqua ammoniæ from the under stratum in the absorption vase M, and forcing it in the cylinder of the exchanger R, where, after performing its office of cooling the weak aqua ammoniæ and becoming itself heated, it passes into the boiler A, near its top, impinging on a series of porous diaphragms of metal W, (fig. 1) suspended in the upper part of the boiler A, to facilitate the rapid separation of the gas a second time. Thus it is apparent that the same aqua ammoniæ may be used over and over again.

"At starting the machine, all the cans J are filled with pure water, and closely covered with wooden lids, and when, after four hours, they are completely frozen, the operator removes the ice, which is effected by simply dipping the cans momentarily in hot water, and then inverting them. The cakes of ice are uniformly rectangular, and as their temperature when removed is far below 32° Fahr., by simply moistening their surface they freeze perfectly to each other, and form solid blocks of ice of any required dimensions."

The reader is referred to our article at page 102, March, 1870, from which the above is extracted, for some further remarks.

LIQUID PEPSIN AND SACCHARATED PEPSIN.

By E. Scheffer.

In my essay upon Liquid Pepsin (*Am. Jour. Pharm.*, March, 1870) doubts were expressed about the durability of the preparation during warm weather. Subsequently, as the weather became warmer, I found that a mould was forming in the liquid, the quicker, the less perfectly the mucus was separated from it, and also when the bottle containing it was from time to time opened, so that the air could come in contact with it.

To satisfy myself I filtered a fresh prepared liquid repeatedly, un-

til it had become perfectly clear, filled several vials with it, corked them tight and sealed them, with the exception of one which was only covered with paper, and set them aside. When after about six weeks I looked after them, I found the vial only tied up with paper, almost entirely filled with a fucoid vegetation, and of the others some had mould on the cork, while a few kept entirely clear and free of mould.

Upon these results I thought it expedient to increase the quantity of glycerin in the preparation to 50 per cent., without changing the proportion of mucus membrane or muriatic acid. The resulting preparation stood the test better during summer, but in a few cases a little mould was also noticed on the cork, although never in the liquid itself. In all cases, however, care must be taken to have the mucus entirely removed from the Liquid Pepsin, and the sooner it can be and is removed, the better the product will be.

Finding it not as easy to get stomachs in summer as I anticipated, and particularly to get a preparation of Pepsin free of acid, as in some cases the physicians wish to have, I endeavored to make a dry Pepsin, which, while available for the dispensing in the form of powder, would serve for the preparation of the Liquid Pepsin.

Of the different formulas given in divers books treating upon organic and physiological chemistry, I found the one by which the Pepsin is precipitated by alcohol the least suitable, as the Pepsin obtained in this way had, after being dried, lost its solvent power on albumen.

After having precipitated the Pepsin and freed it of water as much as possible, by means of a press, it is mixed in the damp state with a weighed portion of sugar of milk, and rubbed in a mortar until it has become dry. By weighing the mixture again the quantity of exsiccated Pepsin is ascertained, and sufficient milk-sugar is added to reduce to such strength, that one grain of the *Saccharated Pepsin*, as I call it, shall dissolve twelve grains of coagulated albumen. This strength seemed to me the most suitable, as one grain is equal to one teaspoonful of my Liquid Pepsin, which dose is found by Physicians sufficient in most cases.

The Pepsin dried without addition of an inert substance could not be dispensed, unless it be in solution, as in that state it cannot be made into powder. When taken out of the press and dried between bibulous paper it is a very tough substance, resembling parchment paper when dried in thin layers, while in thick pieces it looks more like sole leather; it has a yellowish or grayish brown color. In water

it swells up considerably and after some time disintegrates itself to white flakes, which float at first and then settle. Although easily soluble when freshly precipitated, it dissolves, after being dried, very little in cold water, more in water of 80 degrees, but very quickly by addition of a little acid. It is therefore necessary, when Saccharated Pepsin is prescribed in solution, to add a little acid, hydrochloric or lactic. To make Liquid Pepsin from the dry Saccharated Pepsin, I propose the following formula:

℞	Sacch. Pepsin,	64 grains.
	Water,	5 fluid ounces.
	Hydrochloric acid,	1 fluid drachm.

Shake in a bottle until the milk-sugar and Pepsin are completely dissolved, then add glycerin 3 fluid ounces, and filter. A colorless liquid is formed, of which 1 fl. oz. dissolves 1½ drachms of coagulated albumen.

As the normal gastric juice of man and animals contains chloride of sodium, I tried to ascertain if the addition of a little table salt to a solution of unmixed Pepsin in acidulated water would accelerate the solution of coagulated albumen; the result was that Pepsin with chloride of sodium dissolved albumen much quicker than without it. I therefore mention here that chloride of sodium is added to the Saccharated Pepsin.

As for the strength of Saccharated Pepsin, compared with the other dry Pepsins in use here, it was found that one part of it equalled about 3½ parts of Boudault's, 8 to 9 parts of Grimault's, 12 parts of Hawley's and at least, 40 parts of Houghton's. During a period of from 3 to 4 hours, 10 grains of Saccharated Pepsin in a fluid ounce of water, acidulated with 10 drops of muriatic acid and kept at a temperature of 100 to 105° Fahrenheit, dissolved 120 grains of coagulated albumen. Under identical conditions, 60 grains of Boudault's Pepsin* dissolved the same amount; 40 grains of Boudault's Pepsin dissolved the same amount; 30 grains of Boudault's Pepsin did not quite dissolve it; 60 grains of Grimault's Pepsin dissolved but 84 grains; 60 grains of Hawley's Pepsin dissolved but 60 grains. With

* The Boudault's Pepsin, I had used for experiments last winter, must have been adulterated or spoiled, as I recollect right well that it was a damp sticky powder of somewhat different color from the one I used this time, therefore its strength compared with the Liquid Pepsin was found so much less than in the present experiment.

Houghton's Pepsin most of the little cubes into which the coagulated albumen was cut, had not even lost their sharp angles and corners.

To substantiate the assertion made in my essay on Liquid Pepsin (*Am. Jour. of Pharm.* Mar., 1870) that Wine of Pepsin and all other preparations of Pepsin containing alcohol were devoid of digestive power, I made the following experiments: Two equal quantities of dry Pepsin were dissolved in acidulated water, and to one of them, after solution, one third of alcohol was added. The same amount of coagulated albumen was put into each bottle. By the time that the albumen in the vial without alcohol was entirely dissolved, the albumen in the other one was not acted upon, and the little cubes had retained their shape. Dry Pepsin, precipitated with alcohol from its solution, was dissolved in acidulated water and coagulated albumen added to it; a solution of my dry Pepsin was likewise made, and the same quantity of albumen added. The Pepsin made with alcohol did not seem to act at all on the albumen, which appeared to be exactly the same in shape and bulk as when it was put in, when my Pepsin had dissolved the albumen entirely.

It seemed to me of importance to find if Pepsin made from calf rennet was identical with that made from the hog. I therefore prepared Liquid Pepsin from rennet in exactly the same way and the same proportions, as from the mucus membrane of the hog's stomach. When compared with Liquid Pepsin as to its digestive strength it was found that pork Pepsin dissolved about one third more of coagulated albumen than calf Pepsin in the same time. With dry Pepsin made from rennet I obtained the same result. By experimenting with lean beef meat the difference was still more in favor of the pork Pepsin, as a certain quantity of beef was dissolved by this, while the calf Pepsin had loosened the fibres and softened the meat, but the bulk was not appreciably diminished.

Louisville Ky., December, 1870.

NOTE ON OPIUM CULTURE.

By George W. Kennedy, of Pottsville, Pa.

The author, in a letter to the editor, informs that he procured poppy seed from abroad, and supplied it to a friend in Illinois, with the view of trying an experiment in opium culture. The seed were planted in rows two and a-half feet apart, in well manured, rather dry soil, and

in moist soil. The seed sown in the wet soil failed. The plants received good garden culture, and attained a height of three feet. After the petals had fallen and the capsule attained some size, horizontal incisions were made around the capsules in the afternoon, and the exudation removed in the morning and dried in the sun. Some of the capsules failed to yield any juice, owing to the wound being too deep, and the juice passing into the cavity of the capsule. The yield of opium was small, many of the plants being imperfect. Mr. Kennedy made a partial examination of it and detected meconic acid, and when treated by Mohr's process, with subsequent crystallization of the precipitate from alcohol, yielded 8.75 per cent. of morphia crystals, which gave the proper reactions with nitric acid and chloride of iron.

Mr. Kennedy hopes to make a more successful experiment next year.

A LITTLE SIDE-TALK WITH THE "FRESHMEN" IN PHARMACY.

By the Editor.

Some months ago Prof. Attfield, of London, in reply to certain queries relative to the manner of teaching practical pharmacy by the Pharmaceutical Society, informed us that what is here called extemporaneous pharmacy was not taught by that institution, but that pharmaceutical and analytical chemistry occupied the students in their practical school, giving as a reason that all matters pertaining strictly to Galenical pharmacy needed by students were derived from the preceptors where their time was served. Unfortunately, as much cannot be said in this country. The demand for pharmaceutical service has far outstripped the supply of well-grounded pharmaceutists; mere tyros from necessity have many times assumed the position of principals, and in turn being teachers, their tuition has not seldom been the reflection of their own disadvantages. It was to meet this difficulty at home that the Chair of Pharmacy was established in Philadelphia 24 years ago, and in the Practical School commenced the present session it is proposed to afford practical instruction in the most essential details of a dispensing store. The chief hope of beginners is, however, the preceptor, and the books. If among these there are "freshmen" who need a word of advice, who feel discouraged at the slowness of their progress, or the apparently trivial character of

their engagements, to these we would offer a word of encouragement and advice, based on personal experience.

The situation of a boy just entered on duty at a dispensing store is not to be envied. The calls for his service are numerous and frequently beyond his appreciation, so as to make him feel that he is as yet almost powerless to perform his duties from his ignorance of the material with which he has to deal. Besides the mechanical operations, which require dexterity and nimbleness, and which at first are performed with a bungling slowness, he is constantly at fault in finding the locality of drugs, when called by name, or the implements required by a dispenser on whom he is waiting. This epoch soon passes, as with even mediocre perception he should soon acquire sufficient knowledge to render useful aid in many ways. The rapidity of his advancement, next to his natural ability to learn, is much influenced by the character of the dispenser with whom he is associated, and to whom mainly he is to owe the lessons and instruction he is to receive. His duties, besides the cruder ones of opening, sweeping and dusting the shop, making fires, etc., embrace, in a thorough establishment, the use of the contusing mortar and pestle and the hand-mill in preparing drugs for percolation and infusion, the washing of mortars and graduated measures, the cleansing of spatulas and other implements used for ointments, the washing of new and old bottles, the replacing of bottles, etc., used at the counter, cutting labels, making paste, filling shop bottles and drawers from the storehouse and the cellar, the filling, corking, sealing and labelling of bottles of liquid and other preparations, wrapping packages and folding powders, making and using filters, the management of gas heat in making syrups, infusions, plasters, etc., and in conducting evaporation and distillation, the stirring of liquids for extracts, the making of pill masses and the rolling of pills, garbling and cutting drugs, and many other engagements, too numerous to mention here. Not one of these but may be well or ill taught, and carefully or slovenly learned. The old quotation, "as the twig is bent the tree's inclined," applies forcibly to this period, and he is a fortunate youth who falls under the guidance of an earnest and sensible instructor, whose patience is equal to the task of bearing with the aberrations of the beginner. The object of this appeal to the young minds in pharmacy is to urge on them the great value to them in after years of a thorough mastery of these preliminary rudimental details, in which too frequently they

receive no special instruction, having to "*pick up*," as best they can, how to do what they are told. In contusing drugs for powders, when the pestle is held firmly, and the blows planted on a different spot each time, so as to bring the whole material under its action, much more progress is made than when it is carelessly dangled about, striking the sides of the mortar, as though the object was to make much noise. In triturating, Dover's Powder for instance, the same advantage is gained by a constant change in the path of the pestle, so as to cover every portion of the comminuting substance, by alternate spiral motions from the centre to circumference and back again. In nothing is the difference between good and ill training manifested sooner than in cutting and placing labels on bottles and boxes, and the beginner should practice the use of the shears both on curved and square labels until he can not only cut them neatly but quickly; a label with a loose edge or an irregular outline is a mute though less forcible rebuke to the dispenser than when it returns to him for renewal upside down on the bottle, or on the bottom of the pill-box. The washing of mortars often involves far more science than the beginner possesses, and he has constantly to apply for information. Let each difficulty be a lesson for study; why an alkaline or alcoholic solution of soap should remove a resinous body, or an alkali Prussian blue, or muriatic acid a metallic sulphide. Scrupulously clean graduated measures are an ornament to any store and an honor to any junior, and are only attained by constant attention and the habitual use of a swab or feather to remove the insoluble matter precipitated on the interior surface from many liquids when diluted with water, in rinsing. Poisonous bodies like aconitia and veratria, when rubbed down on the ointment slab with alcohol, leave a stain not very perceptible, and which, overlooked by the junior, might damage the next ointment. For this reason the dispenser should be responsible, unless he gives special directions to the junior.

There is a subject which we feel specially called upon to urge strongly on principals, especially druggists, as well as on our present friends, the beginners. *It is the want of order in the store-room and cellar.* How can the junior be sent with safety to fill bottles and drawers unless every receptacle is labelled correctly according to its contents? Many months must elapse or even years before *he* can rely on his knowledge. Labels drop off, covers become displaced, and at times residues returned to the store-room are heedlessly thrown into

the wrong barrel. We could adduce an instance where a long chapter of trouble arose from this cause in a neighboring city. Only lately one of the best dispensers of Dublin caused the death of a prominent citizen by an error arising from sending an ignorant agent to the store-room to fill the carbonate of ammonia bottle—cyanide of potassium being substituted. Hence the importance of an intelligent and frequent supervision of these depositories to insure *order*, out of which comes safety and dispatch, and untold satisfaction.

But the danger of getting prosy, from the very extent of the theme, admonishes us to be brief. Our young friend should bring to his aid an earnest intention to succeed, an obliging disposition, and all the patience that his nature admits of. Let him keep wide awake to what is going on, but especially to all that relates to the business in hand; let him gain the respect and confidence of his seniors by steady and reliable service; let him read attentively the preliminary chapters of Part Second of the United States Dispensatory, and such portions of the special works on Pharmacy as relate to his duties, and we will venture to predict that his difficulties will rapidly disappear, and be replaced by a consciousness of growing knowledge and developing power.

ON SULPHOCARBOLIC ACID AND SULPHOCARBOLATES.

By J. Creuse, of Brooklyn, N. Y.

Sulphocarbolic acid and its compounds are attracting more and more attention; they are noticed in all medical and pharmaceutical publications. It is to be regretted while processes for their preparation multiply, and so many have new ones to propose, that nobody should attempt to enlighten us on their chemical composition, and that our knowledge of them should remain so incomplete.

For example, all the writers almost take for granted that, in analogy with sulphovinic acid, sulphocarbolic acid consists of two equivalents of sulphuric acid and one equivalent of carbolic acid. In all cases, every one takes also for granted that to effect the combination, it is only necessary to mix the two acids in that proportion and apply a moderate heat.

My intention is to prove that, 1st, sulphocarbolic acid is composed of three equivalents of sulphuric acid and one of carbolic acid; 2d, to combine carbolic and sulphuric acids, without waste of carbolic acid,

it is necessary to take six equivalents of the latter and one of the former; 3d, sulphocarbolates are composed of two equivalents of the acid and three of the base.

The process of examination I employed is simple enough: it consists in heating together various proportions of the two acids, and by means of carbonate baryta determining what quantity of sulphuric acid is converted into sulphocarbolic acid, what proportion of it remains free, and how much carbonate of baryta is transformed into the sulphocarbolate of the same base.

This is effected in this wise: Known weights of carbolic and sulphuric acids are mixed together, heated, and when cool diluted with water. To this a certain weight of carbonate baryta, always in excess, is added, and the liquid brought to ebullition, so as to avoid the formation of bicarbonate of baryta. The mixture is then poured on a filter and the filter well washed with water; the filtrate, which I will call liquor *a*, is kept aside. The filter is then washed, first with dilute muriatic acid, and then q. s. water, the washings being kept aside, and called liquor *b*. This done, the filter is dried and the weight of the precipitate taken, which I will call precipitate *c*.

Then liquors *a* and *b* are treated by an excess of sulphuric acid, and the weights of the precipitates ascertained. I will call them respectively precipitate *a* and *b*.

These three precipitates *a*, *b* and *c* consist of sulphate baryta, but each of them has a different meaning.

Thus, precipitate *a* indicates what quantity of the carbonate baryta has been transformed into sulphocarbolate.

Precipitate *b* shows how much of the carbonate baryta was in excess.

Precipitate *c* tells us what proportion of the sulphuric acid remained uncombined in the mixture.

A few words about the *modus operandi* may not be unnecessary: for ascertaining the weight of the precipitates, I cut two filters from the same sheet of paper, trim them precisely to the same weight, and fold them together. The precipitate is collected on the inner filter, both filters are washed together by the same reagents, and dried together. The difference in weights gives quite accurately the actual weight of the precipitate.

By this process I have examined successively mixtures of one equi-

valent of carbolic acid with one, two, four, five, six and eight equivalents of sulphuric acid.

From the first to the fifth mixture, I remarked that precipitate *a* kept steadily increasing in proportion, and remained stationary afterwards. I noticed also that all mixtures containing less than six equivalents of sulphuric to one of carbolic acid had more or less of a carbolic smell, while in this last all odor had completely disappeared. From these two facts, I think I can safely conclude that it requires six equivalents of sulphuric acid to transform completely one equivalent of carbolic acid into sulphocarbolic acid.

Not wishing to make this communication too lengthy, I shall describe here only the examination of the 1st, 2nd and 5th mixtures, the most important.

The first, proposed by Mr. T. Omar Guy, was composed of one equivalent of carbolic acid and less than one equivalent of sulphuric acid, or in weight 94 grains of the former and 49 of the latter; it gave for 100 grains when treated by 35 grains carbonate baryta:

Precipitate	*a*,	37 grs.
"	*b*,	1 "
"	*c*,	1½ "

The second, viz., one equivalent carbolic acid and two equivalents sulphuric acid, or in weight 94 grs. carbolic, 98 grs. sulphuric acid, gave for 100 grains, after saturation by 50 grs. carbonate baryta:

Precipitate	*a*,	49 grs.
"	*b*,	2 "
"	*c*,	9 "

The fifth, containing one equivalent of carbolic acid and six of sulphuric acid, or in weight 188 grs. carbolic acid and 607 grs. sulphuric acid, 79 p. c. was made without heat. After two hours contact the mixture presented no carbolic smell whatever.

One hundred grains of it were treated by 140 grs. carbonate baryta, and gave:

Precipitate	*a*,	41 grs.
"	*b*,	32 "
"	*c*,	92 "

As I remarked before, this is the proportion in which the two acids are to be mixed, in order to transform all the carbolic acid into sulphocarbolic acid.

The weight of the three different precipitates will also teach us the composition of both sulphocarbolic acid and sulphocarbolate of baryta.

Thus, 100 grains of the mixture contained 76·35 grs. of sulphuric acid, 79 p. c. or 60·31 grs. of anhydrous sulphuric acid, and 23·65 grs. of carbolic acid.

Of these 60·31 grs. of sulphuric acid, 31·64 grs. remained free, as shown by the 92 grs. of sulphate of baryta (precipitate *c*), formed by it. Thence, the balance, 28·67 grs., was combined with 23·65 grs. of carbolic acid, forming a certain amount of sulphocarbolic acid, which saturated 27·22 grs. of baryta, as shown by the 41 grs. of sulphate baryta precipitated by an excess of sulphuric acid (precipitate *a*).

We have then for the composition of sulphocarbolate of baryta the following proportions:

Sulphuric acid, ...	28·67 grs.
Carbolic "	23·65 "
Baryta, ...	27·22 "

Dividing these numbers by the respective equivalents of the chemicals they represent we obtain:

Sulphuric acid, . .	7·16	or, in round numbers,	6 equiv.
Carbolic " . .	2·48		2 "
Baryta, ...	3·54		3 "

This does not evaluate the equivalent or equivalents of water, but is a sure guide for the preparation of sulphocarbolic acid and the sulphocarbolates.

Preparation of Sulphocarbolic Acid.

This is the process I should recommend to prepare pure sulphocarbolic acid:

Carbolic acid (Calvert's No. 1), . .	188 grs.
Sulphuric acid, pure, 79 p. c., . .	607 "
Carbonate baryta, . . .	q. s., or 636 "

Melt the carbolic acid, add to it the sulphuric acid by small portions, and let stand in a warm place till all smell of carbolic acid has disappeared. Dilute the liquid with eight times its volume of water, add the carbonate baryta, bring to ebullition and filter. The filtrate should give no precipitate with either sulphuric acid or nitrate baryta.

As sulphuric acid is of variable strength, and the quantity of car-

bonate of baryta is intended only to accurately saturate and remove the free sulphuric acid, it may be necessary to add to the filtrate a little carbonate baryta or sulphuric acid, till it answers the requisite test. The liquid should be then evaporated at a gentle heat, away from the influence of light, and allowed to crystallize.

Pure sulphocarbolic acid is colorless, has no smell, dissolves in water, alcohol and ether, in all proportions; it does not seem to possess any antiseptic properties, for its watery solution becomes mouldy in forty-eight hours when the weather is warm. Nitric acid, especially with the help of heat, decomposes it, forming, among other compounds, picric and sulphuric acids.

Sulphocarbolate of Soda.

This salt may be prepared by saturating sulphocarbolic acid by carbonate of soda. By evaporation, abundant crystals are obtained without difficulty.

Sulphocarbolate of soda is inodorous, almost colorless; it is reddened by exposure to direct sunlight. The shape of its crystals is very much like that of sulphate of zinc. It is neither efflorescent nor deliquescent.* It dissolves readily in water, less so in alcohol, not at all in ether. Nitrate of baryta causes no precipitate in its solution. Sulphocarbolate of soda cannot be kept in weak solution without turning mouldy in warm weather. It is decomposed by nitric acid into sulphate soda, free sulphuric and picric acids, etc.

Sulphocarbolate of Zinc

Is obtained by saturating sulphocarbolic acid with a slight excess of carbonate or oxide of zinc recently precipitated. It crystallizes easily, in the shape of flattened prisms. It has no smell, no color, or hardly any, and tastes very much like sulphate of zinc. It is soluble in water and in alcohol. It is not precipitated by salts of baryta. Direct sunlight affects it much more than the corresponding salt of soda, so that it is more difficult to obtain colorless. It is decomposed by nitric acid in the same manner as sulphocarbolate of soda. Its solutions turn mouldy in warm weather, unless they are concentrated.

The other sulphocarbolates may be prepared in the same manner, should any be required.

Though the above experiments show that *pure* sulphocarbolates

* It tastes like sulphate of soda; slightly bitter and salty, but not acrid.

have no antiseptic power on inert matter, it does not prove at all that they are useless where the human body is concerned. On the contrary, facts tend to show that in the economy carbolic acid is freed from its combination, and that sulphocarbolates are valuable compounds to administer when the effects of carbolic acid are desired, without its caustic properties.

CHEAP PROCESS FOR PREPARING CARBONATE OF BARYTA.

By J. Creuse, Brooklyn, New York.

Carbonate of baryta is a precious reagent to the chemist on account of its very precise combinations, its strong affinities, and the facility with which it can be transformed into the other baryta salts. Unfortunately, the use of carbonate of baryta is limited by the high price it commands. This objection indeed has been made, not without reason, to the process I have proposed for the preparation of sulphocarbolic acid and its compounds.

Precipitated carbonate of baryta is quoted $1.25 per lb. by the manufacturing chemist; it is a high figure, considering that the natural carbonate, otherwise called *witherite*, can be bought in quantities at 8 cts. a pound, already ground.

This great difference in prices is caused by the imperfections of the only process published for refining the natural carbonate. This process, which consists in first making sulphate of baryta, then transforming it, by ignition with charcoal, into sulphuret, is long, tedious and expensive.

I beg to propose another process, whereby, the formation of sulphate baryta being avoided, carbonate of baryta may be obtained sufficiently pure for one-eighth of the usual cost.

It is this:

Take of witherite, in lumps or in powder, any convenient quantity; add to it four or five times its weight of water, and dissolve it with muriatic acid, gradually added. Stop the addition of acid before the mineral is entirely dissolved, so as to have an excess of baryta rather than an excess of the acid. Allow to settle, and decant the clear liquid; to this add a solution of oxalic acid as long as a precipitate is formed; a slight excess is not objectionable. Thirty grains are generally sufficient for each pound of witherite, though the proportion may vary according to the purity of the mineral. Allow the liquid to stand one hour; filter, and add to the filtrate a quantity of caustic soda,

just sufficient to give it a decided alkaline reaction. After an hour's rest filter again, and treat the liquid by a solution of carbonate of soda. Collect and wash the precipitate in the usual manner.

This process of refining is founded on a fact I have observed, that when a solution of oxalic acid is added to a liquid containing salts of lime and baryta, both, all the lime is precipitated first and immediately, while baryta is only affected after some time. The lime being thus eliminated, caustic soda precipitates all the foreign bodies likely to be present, such as iron, alumina, copper, lead, etc.

It may be objected that this process does not free baryta from strontia. To this I will answer that, 1st, strontia is seldom if ever found in witherite; 2d, the old process is no better, as sulphate of strontia is almost as insoluble as sulphate of baryta. If, however, a chemically pure carbonate of baryta is desired, it may be obtained by a slight modification of the *modus operandi*. It is only necessary to use pure chemicals, and purify by repeated crystallizations the chloride of barium previous to the addition of the carbonate of soda.

ON THE SO-CALLED BUCHARIAN RHUBARB.

By A. Fero, of Moscow.

In my thesis on the kinds of rhubarb at present in Russian Commerce*, I have described a so-called Bucharian Rhubarb, which was frequently met with in Russia during the years 1864 and 1865. I was at that time unable to discover the route by which it had entered Russia; but the fact was that it was in considerable quantity at the fair of Nishni-Nowgorad, also in St. Petersburg and Moscow, and was likewise often sold in the southwestern provinces of Russia. Prof. Dragendorff has investigated its history and furnished me with conclusive evidence that it did not come from Bucharia, but was imported from the west into Russia. The law forbidding the entry into Russia of all except the crown rhubarb, being then still in force, the name had evidently been selected to cover up its true origin. Even in Germany attempts were made in 1866 to introduce this rhubarb under the false and nonsensical name of Japanese rhubarb, and in 1868 it was there sold as flat English rhubarb. This latter name it ought to retain in future, since it was imported from England and most likely cultivated there.—*Pharm. Zeitschr. f. Russl.*, 1870, *Sept.* 511.

J. M. M.

*See Amer. Journ. Ph. 1867, 212.

THE STRENGTH OF FLUID EXTRACTS.

By James W. Mill.

It has been proposed recently, in this journal and elsewhere, to reduce all fluid extracts to one uniform strength—that, viz., of eight troy ounces of drug to the pint, instead of sixteen troy ounces as is the rule now. In favor of this proposition it is urged that it is practically impossible to carry out the present formulas of the Pharmacopœia for this class of preparations, the drug being directed in such very fine powder, and the expenditure of time and labor, necessary to secure a successful result, so great, to say nothing of the waste of alcohol, that dispensing pharmacists cannot, or, in fact, with only an occasional exception, do not prepare them themselves, but, instead, purchase the ready-made inferior products of the wholesale manufacturer. The reduction of the strength, as proposed, it is claimed, would obviate all trouble,—dispensing entirely with the application of heat, ensuring the complete exhaustion of the drug, and enabling the pharmacist to prepare his own fluid extracts in any quantity desired, and with very little trouble or expense,—a single percolation, to the extent of two pints for every sixteen troy ounces of drug, being all that would be necessary.

The writer fully realizes the great expenditure of time, labor and attention necessary to the correct preparation of fluid extracts of the present strength, and would gladly welcome any new process by which the desired object could be accomplished more easily. The proposed reduction of strength would, it is true, very materially lessen the labor, and render the preparation of a fluid extract a comparatively easy matter, but could such a preparation, with any propriety, be called a *fluid extract?* The term, "Fluid Extract," it is true, is purely arbitrary, and may be made to mean a fluid preparation, representing in every pint the medicinal virtues of sixteen, eight, or even four troy ounces of drug; but in a work like the Pharmacopœia, claiming something of a scientific character, there surely should be as close a relation as possible between the language employed and the meaning intended to be conveyed. Now an "Extract," as defined by Wood and Bache in the U. S. D., is well understood to mean "a solid substance resulting from the evaporation of the solution of vegetable principles, obtained either by exposing the vegetable to the action of a solvent, or by expressing its juice in the recent state." Would not

then the term "Fluid Extract" mean simply an extract-fluid, and very aptly characterize either the solid extract liquified to a point at which it would be permanently fluid, or the original solution evaporated down to that point? Owing to the varying amount of soluble medicinal matter contained in different drugs, fluid extracts made on this plan would, as a class, be very various in strength,—a given quantity of one fluid extract representing one proportion of drug, and another a different proportion,—practically, therefore, so great concentration is not desirable, and some standard is necessary which includes uniformity of strength and facility of preparation, as well as adaptability to the wants of the physician. The present standard of sixteen troy ounces to the pint seems best to fulfil these requirements. Made of this strength, a fluid extract of a drug is its fluid representative, to all medicinal intents and purposes, the same thing as the drug itself—superior to it, in fact, in having a more prompt therapeutic action and readier facility of administration. What more desirable preparation of a crude drug could be offered the medical profession or their suffering patients?

But—and this is the main question—are fluid extracts of this strength practicable? Is their correct preparation within the range of the usual facilities of a dispensing establishment? Or does it involve so great an expenditure of time and labor, and so great an outlay for costly apparatus, that the already much pre-occupied pharmacist may justly excuse himself from the undertaking? While protesting against any change in the strength of fluid extracts, the writer does not endorse the formulas given by the Pharmacopœia for their preparation. Indeed, literally construed, they are impracticable. It is practically impossible, with the usual facilities to be found in stores,—even the best appointed,—to reduce a drug to the degree of fineness directed by the Pharmacopœia. For example, in the process for fluid extract of buchu, the drug is directed to be in powder "moderately fine," *i. e.*, a powder that will pass through a sieve of fifty meshes to the inch. Now it is simply not possible to accomplish this within any reasonable time, or when any but the smallest quantities are operated on. In the experience of the writer it requires considerable muscular exertion to obtain even one-third of any given quantity (over a few ounces) in the state of fineness directed. The only practicable thing is to grind the drug as fine as possible, and sift it successively through sieves twenty, forty, and sixty meshes to

the inch,—repeating the operation two or three times, or so long as any fine powder is obtained. In packing for percolation the powders are arranged in the order of their fineness, commencing with the finest—thus exposing the least permeable portions of the drug to the most solvent portions of the menstruum, and also ensuring a slow rate of percolation, so essential to a successful result. Operating in this way, perhaps a little more menstruum is required than if the drug were in "moderately fine" powder, as directed, but then the process is brought within the range of practicability, while before it was not.

The low degree of temperature directed for the evaporation of the percolate furnishes another ground for reasonable objection to the officinal processes, on account of the waste of alcohol, the temperature specified not permitting of its recovery by distillation. Economically considered, and on the scale of the Pharmacopœia, this objection hardly has any weight, as the waste would be but trifling; on any larger scale, however, the saving of the alcohol becomes a matter of some economical importance, and its recovery therefore, by distillation in a water bath still, should receive the sanction of the Pharmacopœia. No appreciable injury to the medicinal matter can result from the necessary increase of temperature, as this would be more than counterbalanced by the more perfect exclusion of atmospheric influences.

With these modifications of the formulas surely the preparation of fluid extracts, of the strength of sixteen troy ounces of drug to the pint, is not a very difficult matter. The apparatus required is exceedingly simple, a drug mill, a set of sieves, a percolator, and a water-bath still being all that is necessary. Is there a druggist in the land who considers his vocation anything more than the mere buying and selling of drugs, not already possessed of these necessary implements of his art? Scientifically considered a simple matter, the correct preparation of a fluid extract does involve strict care and attention, and a conscientious selection of the crude material. No amount of *science* will atone for poor material or careless manipulation.

The proposed reduction of strength, it is claimed, would ensure the complete exhaustion of the drug. In a limited number of instances, doubtless, this claim would hold good,—in drugs, for example, like ginger, which yield their medicinal matter easily and readily to a solvent; but that senna, rhubarb, cinchona, or drugs generally, can be exhausted in this way, is altogether contrary to the writer's experience. Just the amount of menstruum necessary for exhaustion varies, of

course, with the varying amount of soluble medicinal matter contained in different drugs; but, as a rule, adapted to the treatment of drugs generally on the small scale, and in an ordinary displacement funnel, three pints of percolate for every sixteen troy ounces of drug, although excessive in some cases, no doubt is yet the safest for general use. Were the percolation stopped at two pints of percolate for every sixteen ounces of drug, the resulting preparation would, in most cases, be simply a concentrated tincture, representing no definite quantity of drug,—superior, perhaps, to many of the so-called fluid extracts of the market, but by no means to be considered a true representative of the original drug. Doubtless there are physicians to whom the excess of alcohol would not be an objectionable feature, and who would prefer such concentrated tinctures, prepared by the apothecary himself, to the uncertain products of the market. It might be well enough therefore (although the writer does not recommend it), to introduce them into the Pharmacopœia, under, however, a separate and distinct title, such as Tincturæ Fortiores, retaining Extracta Fluida for the many physicians who dislike to prescribe alcohol, except in minimum doses.

The following formulas illustrate the ideas of the writer on this subject:

Extractum Buchu Fluidum.

Take of Buchu, sixteen troy ounces.
Glycerin, four fluid ounces.
Alcohol and Water, sufficient.

Grind the buchu, and sift it successively through No. 20, No. 40, and No. 60 sieves, keeping the result of each sifting separate. Mix the glycerin with twenty fluid ounces of the alcohol, and with five fluid ounces of this menstruum moisten the different lots, and introduce them successively into the percolator, commencing with the finest; pack firmly, and gradually pour on the remainder of the alcohol and glycerin, following it with a mixture of alcohol and water in the same proportion, till the drug ceases to absorb any more and the menstruum remains permanently on the surface; then, having closed the orifice of the pecolator with a cork and put on the cover, set aside to macerate. At the end of twenty four hours, or longer, remove the cork and allow the percolation (which should not be faster than ten drops per minute) to proceed. When the liquid has disappeared from

the surface pour on menstruum till twelve fluid ounces of percolate have passed; set this portion aside, and continue the percolation with the remainder of the menstruum, and finally water, till the buchu is exhausted, or until two pints more of percolate have been obtained. Concentrate this by distillation in a water-bath still till reduced to four fluid ounces, and mix it with the reserved percolate. Allow the mixture to stand for twenty-four hours and filter through paper.

The menstruum employed in this formula is less alcoholic than the Pharmacopœia directs, but it is sufficiently so to extract and retain in solution the active principles of buchu. The glycerin seems to prevent the separation of resinous matter, which occurs during distillation, when a purely alcoholic menstruum is employed. In the unfiltered fluid extract no deposit had occurred after the lapse of several weeks.

In connection with this fluid extract the following observations may be of some interest: Thirty-two troy ounces of buchu were prepared in the manner above described, and packed in a percolator six feet high and two inches wide at the mouth, gradually tapering to one and a quarter inches at the bottom. A full supply of menstruum (alcohol three parts, water one part, sp. gr. .895) was poured on at the beginning, and percolation commenced on the second day after at the rate of about ten drops a minute. The percolate was received in a small flask, in nine separate portions, each measuring seven and a half fluid ounces. The first portion was received about twenty-four hours after the commencement of percolation, and the remaining portions at intervals of about the same length. They had the sp. gr. respectively of .995, .985, .965, .960, .950, .935, .920, .910, .900. A mixture of the first four portions, with sufficient of the fifth added to make the measure up to thirty-two fluid ounces, had the sp. gr. .965. A parallel experiment, conducted in an ordinary cylindrical glass percolator, three and a half inches in diameter, and fifteen inches high, showed the same ultimate result, but not so great concentration in the first portions of percolate—the sp. gr. of the first thirty-two fluid ounces being .960 instead of .965 as in the other experiment. The last portion of percolate had a very light color, and but little of the odor or taste of buchu, and the drug may safely be considered exhausted at that point. All drugs, however, are not so readily exhausted as buchu; and although, in this case, thirty-two fluid ounces of percolate would very well represent sixteen troy ounces of drug, it does not follow that it would be a safe rule in all cases; it is only pru-

dent therefore that the Pharmacopœia should direct a little too much menstruum in some instances than not enough in others.

Extractum Cinchonæ Fluidum.

Take of Cinchona, yellow, sixteen troy ounces.
Alcohol, four pints.
Glycerin, eight fluid ounces.

Grind and sift the cinchona in the same manner as directed for buchu, mix the glycerin with three pints of the alcohol, and with six fluid ounces of this menstruum moisten the cinchona, and pack moderately in a glass percolator; pour on the balance of the alcohol and glycerin, and then the remaining pint of alcohol, following it with water, till about four pints of percolate have been obtained. Put the percolate into a water-bath still and distill off the alcohol till reduced to the measure of sixteen fluid ounces. This is essentially the formula recommended by Dr. Squibb (Amer. Jour. Phar., vol. 39, page 515), differing only in this, that the glycerin forms part of the menstruum —thus securing its solvent as well as its preservative influence, and also reducing, to the extent of the quantity of glycerin present, the amount of evaporation necessary. With the glycerin diluted to the extent it is in this formula the percolation is not too tedious.

Extractum Hyoscyami Fluidum.

Take of Henbane Leaf, sixteen troy ounces.
Glycerin, four fluid ounces.
Alcohol and Water, each a sufficient quantity.

Mix the glycerin with twelve fluid ounces of alcohol and eight fluid ounces of water, and with six fluid ounces of this menstruum moisten the henbane previously prepared for percolation. Pack firmly in a cylindrical glass percolator, and pour on menstruum till the surface remains covered; macerate for twenty-four hours, then proceed with the percolation, using the remainder of the glycerin menstruum, dilute alcohol and water successively till at least three pints of percolate have been obtained. Of this reserve the first twelve fluid ounces, and distill the remainder in a water-bath still till reduced to eight fluid ounces; to this add the reserve percolate, and continue the distillation till reduced to such a point that, when cold, the finished fluid extract shall measure exactly sixteen fluid ounces.

In the same way prepare fluid extract of senna, uva ursi, spigelia, sarsaparilla, dulcamara, serpentaria, taraxacum, and gentian.

Extractum Rhei Fluidum.

Take of Rhubarb, sixteen troy ounces.
Alcohol,
Diluted Alcohol, each a sufficient quantity.
Glycerin, four fluid ounces.

Mix two fluid ounces of the glycerin with fourteen fluid ounces of alcohol, and with six fluid ounces of this moisten the rhubarb (ground, and as much as possible of it passed through a No. 40 sieve). Pack moderately in a conical glass percolator, and pour on the remainder of the glycerin and alcohol. Macerate for twenty-four hours, then mix the remaining two fluid ounces of glycerin with one pint of alcohol and fourteen fluid ounces of water, and with this and diluted alcohol continue the percolation till first sixteen fluid ounces, which reserve, and then about two pints more of percolate have been received; this latter percolate distill in a water-bath still till reduced to twelve fluid ounces, to this add the reserve percolate, and continue the distillation till reduced to such a point that, when cold, the fluid extract shall measure exactly sixteen fluid ounces.

Carefully prepared in this way, from really good material, fluid extracts are very faithful representatives of the original drugs, and their preparation is not more difficult than is that of compound syrup of sarsaparilla, for example, or any other preparation requiring care and attention. Aside from the satisfaction of knowing just what he is dispensing, the preparation of fluid extracts by the apothecary further recommends itself on economical grounds, for by the saving of the alcohol and by taking the precaution to prepare a season's supply during the winter,—when there is more leisure time, and when the same fire can be used that is used for heating purposes,—their cost can be brought considerably below the price paid to the wholesale manufacturer.

Chicago, Ill., August, 1870.

—*The Pharmacist, Chicago, Oct.* 1870.

[Note.—We cannot withhold a hearty approval of the views offered in the paper of Mr. Mill in favor of retaining the officinal strength of fluid extracts, and of the manner of executing the processes. The constant complaint amongst apothecaries of the present day in regard to the labor of comminuting drugs seems to indicate a growing contempt for the mortar and handmill as proper pharmaceutical implements. There has also grown up in the pharmaceutic mind a remarkable dread of the effects of heat, be it ever so moderate, on the

medicinal power of drugs. It is admitted at once that direct heat has a tendency to injure all solutions of organic matter; but when the water bath (or water bath still) are employed, they embody every requisite, except in case of very volatile substances, as the temperature of the former may be regulated when necessary as low as 120° Fahr., and the latter never exceeds 212° Fahr.; but even these are laid under ban by some of the writers of the later times. Some of these *reforms* are certainly to be deprecated as a decline in the practice of our art, and while we shall hail the advent of any process which shall really substitute evaporation in fluid extracts, we believe a more serious attention on the part of the fathers in pharmacy to the improvement of the means of comminution *in* the apothecary's shop will result in real progress in the art of extracting drugs.—Editor Am. Jour. Pharm.]

A COMBINED SOLUTION OF PEPSINE AND PANCREATINE.*

The value of pepsine as a remedial agent in cases of indigestion is generally admitted, but experience has proved that it is only in certain forms of indigestion that it is of use.

Food is divided into two classes, nitrogenized and unnitrogenized. The former, being digested in the stomach, is acted on by pepsine; the latter, digested in the intestine, escapes its action almost altogether. The only action pespine, as it appears in the gastric juice, seems to have on fat is to dissolve the albuminous cell-wall, so leaving the fat free to be acted upon by the pancreatic secretion. This suggests a probable cause of indigestion; for if the gastric fluid be deficient in quantity or quality, the albuminous cell-walls of the fat may not be dissolved, the fat is not acted on sufficiently by the pancreatic secretion, and not being emulsified, cannot be taken up by the lacteals. On the other hand, diseases of the pancreas or intestine, by checking the absorption of fat, may cause indigestion incurable by pepsine. This indigestion should be treated by pancreatine, the chief action of the pancreatic secretion being the emulsion of fats.

There being two classes of food to be digested, each in a different portion of the digestive tract, it is evident that the more perfectly one is digested the more easily will the other be. If the stomachic digestion be weak, the fat granules are not set free nor the fibrine dissolved as they should be; the consequence being that the pancreatic secretion cannot do its work properly. If the intestinal digestion be weak,

* Abstract of a paper by Richard John Kinkead, B. A. and M. T. C. D., in the *Lancet*, No. xx. vol. ii. 1870.

the emulsifying of the fats as they pass from the stomach being imperfectly performed, the food is detained longer in the stomach than is right, the proportion of fat to fibrine is increased, the fat enveloping the nitrogenized food hinders the action of the gastric juice, and acidity and stomachic indigestion are produced. In treating stomachic indigestion, therefore, it is important to accelerate the digestion of fatty and saccharine portions of the food; and in intestinal to accelerate and perfect the digestion of the albuminoids. There are also cases in which the digestion of both the nitrogenized and unnitrogenized food is at fault.

Impressed with the foregoing ideas, Mr. Edward Long, of Dublin, sent to the author a sample of his solution of pepsine in glycerine, asking him to try it in practice, and give his opinion upon it. The author, however, thought that a solution of pepsine and pancreatine, combined in suitable proportions, wonld fulfil the conditions necessary for a perfect digestive; he therefore suggested to Mr. Long the preparation of such a solution. The result of the experiment is given in a letter from Mr. Long to the author, from which we give the following extracts:—

"Following up the subject of our conversations some time since, I have been making experiments on pancreatine obtained directly from the fresh pancreas of the calf. The result has been quite what might have been expected from *á priori* reasoning, as you will see from the subjoined statements.

"Some difficulty was experienced in obtaining the solution of pancreatine in an eligible form for administration; but at last I succeeded in producing what as closely as possible represents the digestive fluids found in man. It is composed of pepsine and pancreatine in suitable proportions, using for the former a solution of pepsine introduced by me some time ago, and adding the solution of pancreatine as now prepared.

"In the experiments made to test its effects a very curious result was observed. Meat—beef and mutton—digested in pepsine alone was found to be entirely dissolved with the exception of the fat, which floated as a film on the surface, and the film was entirely emulsified when a proper quantity of pancreatine was added, and the usual conditions as to temperature, etc., attended to. This is exactly what we might expect, reasoning from known physiological principles.

"Pepsine in an effectual form has been a great boon; but, as I

have shown above, it will not digest the oily or fatty aliments; failing thus to supply the system with the substances vitally necessary in strumous diseases. It is obvious how desirable the action of this fluid will be as an addendum to the use of cod-liver oil.

"The pancreatic emulsion has never seemed to me the nicest or most eligible mode of effecting what is desired. It is nauseous to the taste of many, and often keeps badly; the quantity of mutton suet employed, which may be supposed to be all the fatty matter the pancreatine present is capable of emulsifying, is not as much as might be desirable in many cases. In some, suet at all may not be the most suitable form of fat. The fluid I now describe is very palatable, and will keep almost any time. It may be given with any kind of food. My experiments were made with fat mutton-chops and rich beef-steaks, as typical aliments, with most satisfactory results.

"The first experiments, thrice repeated, were made with muriatic acid, water, and the combined solution, to represent the gastric juice and pancreatic secretion. The second, with solution of pepsine alone, with acid and water, followed by the addition of the plain pancreatic solution after an interval of two hours. Both were entirely satisfactory; but the latter were peculiarly interesting in a physiological point of view, as stated above, and tended to show the exact part played by each fluid in the animal economy. But as the administration of two fluids in succession would be troublesome in practice, and be scarcely attended to by patients (at all times averse to trouble), I have thought it desirable to mix the two in one fluid. This has the advantage of being quite agreeable, as liquor of pepsine always is; while the taste of the liquor of pancreatine is entirely concealed by the former. Some medical friends of mine reported most favorably of it, after trial in practice.

"The experiments in the laboratory were as follows:—

"No. 1.—Mutton (fat and lean about equals parts), one ounce; water, one ounce and a half; muriatic acid, fifteen minims; solution of pancreatine and pepsine, one drachm. Digested at 100° for four hours, this was converted into a homogeneous pulp, and then diluted with a little water, presented quite a *chylous* appearance.

"No. 2.—Beef (fat and lean), an ounce and a half. Treated in the same way, with same result, the pulp being much deeper in color.

"Nos. 3 and 4.—I then operated on the same quantities of each, first digesting with pepsine solution alone, as intimated above, and

then adding the liquor pancreatine—keeping up the heat. In these latter experiments the result seemed more perfect, but, as I have said, the same procedure would be rather inconvenient in practice.

"The results were found to be identical in three successive experiments, at intervals of several weeks."—*Pharm. Journ., London, Nov. 19th*, 1870.

CUCUMBER OINTMENT.

Editor Pharmacist:

Dear Sir,—Having been requested by a physician to prepare some cucumber ointment for him, I tried several formulas without producing as nice a one as I wished. I first employed that of Prof. Procter, but found that it was too troublesome and tedious, while it did not furnish an elegant preparation. The following is the formula which I have used, which is quite simple and easy, and any apothecary can prepare it.

Take of Oil of Sweet Almonds, seven fluid ounces.
Spermaceti, eighteen drachms.
White Wax, five drachms.
Glycerin, one fluid ounce.
Green Cucumbers, lbs. iv.

Cut the cucumbers in small pieces, mash them in a wedgewood mortar, let them macerate in their own liquor for twelve hours, express and strain; melt the almond oil, spermaceti and wax together, by means of a water bath; add to it the strained liquor, stirring constantly so as to incorporate the whole together. Set aside in a cool place (an ice chest preferred), till it becomes hard, then beat with a wooden spoon, so as to separate the watery portion of the cucumbers from the ointment, pour off the liquor thus obtained, and mix the glycerin with the ointment without the aid of heat, by working it with the hands until it becomes thoroughly incorporated. Put up in four ounce jars, cover with a layer of rose water, and set aside in a cool place. The ointment prepared in this way will keep sweet and nice for twelve months. It is much esteemed by physicians and the public generally in the south and southwest.

Respectfully, LUTHER E. SALE.

Huntsville, Aug., 1870.

—*The Pharmacist, Chicago, Oct.* 1870.

THE OPIUM TRADE OF CHINA.

By P. L. Simmonds.

Few are, perhaps, aware of the enormous trade still carried on in opium from India to China; and what is, probably, even less generally known, is that the poppy is largely cultivated in China itself, and that the native drug is beginning to replace much of the Malwa opium. Mr. R. Fortune saw the poppy extensively grown in China for the purpose of inspissating the juice, but was able to form no estimate of the quantity actually grown. We have, however, confirmatory recent evidence of the extension of the culture and production in China. More than thirty years ago it was stated in the *Chinese Repository*, on the testimony of the consellor Choo Tsun, that in his native province, Yunnan, the poppy was cultivated all over the hills and open country, and that the quantity of opium annually produced there could not be less than several thousand chests. Indian opium now brings in an average annual gross revenue to the Indian Government of about £8,200,000.

The value of the opium shipped from India to China in the last ten years is thus given in the official statistics; from which it will be seen that the average annual import has not varied very greatly in the two quinquennial periods, although there are alternate high and low years, and the price fluctuates much:

	£		£
1860, . . .	9,054,394	1865, . . .	9,911,804
1861, . . .	10,184,713	1866, . . .	11,122,746
1862, . . .	10,553,912	1867, . . .	10,431,703
1863, . . .	12,494,128	1868, . . .	12,309,915
1864, . . .	10,756,093	1869, . . .	10,695,654
Total, . .	53,043,240	Total, . .	54,471,822
Average, . .	£10,608,648	Average, . .	£10,894,364

In 1856 the consumption of Indian opium in China was about 82,000 chests, of 140 lb. each, but this was exceptionally large.

In his report upon the trade of Tien-tsin for 1866, our Consul drew attention to the fact that the increase in the importation of opium in that and the previous year had been immediately preceded by an Imperial edict, issued on the 28th April, 1865, which prohibited the cultivation of the poppy throughout the empire. He stated that though,

at first, the operation of this edict was beneficial to the trade in foreign opium, the poppy was still grown extensively, and the prohibition would prove ineffectual. That such has hitherto been the result is proved by the fact of another edict having been issued on the 31st January, 1869, redirecting all viceroys and governors to cause proclamations to be issued, forbidding altogether the cultivation of the poppy, which is stated to have been introduced from Kan-suh into Shen-si and Shan-si, and afterwards grown in the provinces of Kiang-su, Honan and Shan-tung. The ground of objection to the poppy, and even to potato culture, stated in the edicts, is that they withdraw land from the cultivation of rice and grain.

There is little doubt that the competition of native-grown opium has had much to do with the declining price of the foreign-grown since 1866, and that at the same time the increased production of the native has lessened the importation of Indian opium.

At Tien-tsin, since 1866, it is certain that a yearly diminishing importation has accompanied a yearly falling price, plainly indicating a decreasing demand for foreign opium. There is no evidence, however, according to Mr. Consul Mongan, of the decrease of opium smoking, but rather of its increase; and therefore it may fairly be inferred that the quantity of native opium has so much increased, or its quality so much improved of late, as to have shut out a considerable amount of the Indian drug. This inference, too, is much strengthened by the reference which the late edict makes to the spread of poppy culture over northern China.

In addition to the provinces enumerated in the edict, there is also ample evidence of extensive poppy cultivation in other parts of the Chinese empire. It seems to have been carried on for many years in the extreme south-west in the province of Yunnan, the largest portion of which has thrown off its allegiance, and is now a practically independent kingdom.

Sze-chuen has also been for many years a great poppy province, and the drug produced there very perceptibly affects the market at Hankow. When Lord Elgin visited that city in 1858, he stated (Blue Book, 1859, page 443) that he saw there "shops where native opium was openly advertised for sale. Mr. T. T. Cooper, in some notes on his travels towards India through Central China, speaking of Sze-Chuen, says, "In spring the country was white with the flower of the opium poppy, now one of the staple productions of the province;"

and Mr. A. Wylie, the well-known Sinologue, who has travelled lately in the same province, says in a letter, "One fact I can vouch for, and that is the widespread use of the drug, and consequent degradation of the people. It was pitiable to see the victims of this practice coming to us to ask for relief and desiring to be cured, and such were by no means confined to the lower classes. I believe the practice in Sze-chuen, as elsewhere, is very widespread among the literary and governing class. From all the information we could gather, it commenced in this province within twenty or thirty years past. In the 'Statistical Account of Sze-chuen,' published in 1817, which gives a detailed list of the productions of the province, the poppy is not named. I do not remember seeing any foreign, though it is sold there, but at every market the farmers bringing in their little lumps of native production were always to be met with. As far as I could learn, the price ranged from 140 to 250 cash the tael weight."

Another vast region, not mentioned in the edict of 1869, in which poppy culture has been spreading rapidly within the last few years, is Eastern Mongolia and Central and Northern Manchuria, the drug thence brought down to the coast competing with Indian opium in the Newchwang market. Thus, in the provinces of Yunnan, Sze-chuen, Shen-si, Kansuh, Shan-si, Honan, Shan-tung and Kiang-su, as well as in Manchuria and Mongolia, native opium is produced; and that its consumption by the Chinese is lessening the demand for the Indian drug, would seem to be indicated by the fact that in 1868 the total importation of the latter was less than it had been in 1867 by 4789 chests, representing a value, at the average ruling rate, of nearly two millions sterling.

These figures are given in a letter that was published in the *North China Daily News* of the 22d February, 1869.

Native opium sells in Tien-tsin at from 125 taels to 200 taels per picul less than Indian, and, though nominally prohibited, it pays a similar local duty to foreign. Opium is brought into Tien-tsin either crude or prepared. When in the former state it is generally spoken of as "tu," earth or clay, from its outward resemblance to lumps or cakes of common clay: and the native, as distinguished from the foreign, which is termed "yang-tu," or foreign earth, is called "hsi-tu," or western earth—a name that has clearly a geographical reference to the producing provinces. (Consular Reports, No. 2, 1869.)

Prepared opium, called "ya-pieu-kao," is generally composed of foreign and native drug boiled down, and often largely adulterated by an admixture of various glutinous substances, and amongst the rest by a decoction of the berries of a leguminous tree called the "huai-shu," which grows abundantly in the province.

Before concluding, I may give a few figures showing the imports and consumption of opium in the United Kingdom. Opium imported and used in this country:

	Imports. lb.	Consumption. lb.
1830, . . .	209,076	22,668
1845, . . .	259,644	38,229
1850, . . .	126,318	42,324
1855, . . .	50,143	34,473
1860, . . .	210,867	112,795
1865, . . .	401,571	225,571

The Board of Trade returns for the last two years are, of course, not yet issued.

The largely increased imports and consumption, unless a greater home stock is held, would give ground to the opinion that opium is beginning to be used somewhat extensively for other than medicinal purposes.

In 1858 we imported but 82,085 lb., and retained for consumption 77,639 lb. In 1868 we imported (nearly all from Turkey) 322,309 lb. and re-exported 123,965 lb., thus leaving 198,344 lb. for home consumption. The reshipments are principally to Holland, the United States, New Granada and the West Indies. In the latter countries it is evidently destined for consumption by the Chinese.—*Pharm. Journ., Lond., Nov.* 5, 1870.

MANUFACTURE OF IODINE FROM THE SO-CALLED CHILI SALTPETRE (NITRATE OF SODA.)

By Dr. A. Lachmann.

The author states that at Tarapaca, Peru, there are now obtained about 40 kilos. of iodine daily by means of a process which is described as follows:—The mother liquors from the refining of the crude nitrate of soda are carefully mixed with a mixture of sulphurous acid and bisulphite of soda, whereby all the iodine present in the liquor is

precipitated in the free state as a blackish colored precipitate; the iodine thus deposited is next freed from adhering fluid by placing it in an earthenware vessel, at the bottom of which are placed several layers of clean sand, so arranged that the size of its grains decrease from the bottom upwards. On the top of this sand the wet iodine is put, the sand acting as a sponge to absorb the fluid. When the iodine has become dry, it is carefully removed from the vessel, but a thin layer of it is left on the sand; the crude iodine is refined by sublimation. The inventor of this process, a Frenchman named Thiercelin, has recently found that, instead of using sulphurous acid, it is more advantageous to employ nitrous acid, obtained in the shape of nitrite of potassa by the ignition of a mixture of 1 part of charcoal and 5 of nitrate of potassa; the nitrite obtained yields, when mixed with the mother-liquor, a precipitate containing some 80 per cent. of iodine.—*Chem. News, London, Nov.* 4, 1870

ON ALUMINIUM WEIGHTS.

By Dr. T. L. Phipson, F.C.S.

For the last ten years—that is, since May, 1860—I have made use of a set of aluminium (division of the gramme) weights. On the average these weights have been used at least twice or three times a day for a period of somewhat more than ten years. They were supplied by MM. Collet, Frères, of Paris. Latterly, I have tested them and found them as accurate as the day on which they were first used. They are almost as brilliant as when new. The larger weights 0.5, 0.2, and 0.1 gramme show slight traces of tarnish, but their weights are still quite accurate.

During this period of ten years these weights have never been touched except by a pair of soft brass nippers, and they have never been left exposed to the air for more than a few minutes at a time. However, they have, of course, been exposed for a minute or two at intervals to an atmosphere more or less impregnated with acid or alkaline vapors, and if we add these odd minutes together, it will be found that these gramme divisions in aluminium have had to undergo a considerable amount of "atmospheric influence" during the period of which I speak.

I need scarcely say what a luxury it is to use such large weights as

these in comparison to the platinum gramme divisions, and I am surprised that they are not more generally adopted in our laboratories. The set contains 14 weights, from ½ a gramme to ½ a miligramme. As to brass or copper divisions, I have always considered them inaccurate, for they tarnish very rapidly in an atmosphere which, for that of a laboratory, might be considered tolerably pure. Weights of maillechort (a kind of German silver) resist much better than copper or brass weights; I have a set since the year 1856, the gramme divisions of which extend only to the centigramme, and are perfectly bright and accurate at the present day, but they have only been used occasionally.

The Cedars, Putney, S. W., October 10th, 1870.

—*Chem. News, London, Oct.* 14, 1870.

MALT EXTRACTS.

By Albert E. Ebert.

[The author states that two classes of preparations are known under this title, one analogous to lager beer having a three per cent. alcohol strength, of which the preparations of Hoff and Koch are examples; whilst the other kind is saccharine and gummy in their nature, and usually bear the name of Liebig. The author considers the first class to be good beer at an exhorbitant price, and criticises severely those professional men who have given it their endorsement.

The second class of Malt Extracts, of which Ed. Loeflund and Dr. H. E. Linck, both of Stuttgard, are makers, are put up in patent medicine style, and though claimed as original, this point is questionable, as Malt Extract has long been known in Great Britain and Belgium as well as in Germany.]

Prof. Liebig does not lay any claim to the discovery or introduction of this preparation; we have heard him, during his lectures, denounce this attachment of his name to these extracts, it having been done in opposition to his wishes by parties who hoped to increase their sales by this seeming endorsement of their articles. We have lately made the malt extract, at the urgent request of physicians, and give herewith the process, so that pharmacists may prepare it themselves, instead of relying upon the specialist to supply it at exorbitant prices.

Take of Barley Malt, kiln dried, 10 lbs., av.

Water, a sufficient quantity.

The malt can be obtained at the malt-houses or breweries, by the bushel; reduce it by means of the drug mill so that it will pass through a No. 20 sieve, and add to the meal a sufficient quantity of cold water to form with it a soft dough; then add about two gallons of hot water, and apply heat so as to raise the temperature of the mixture to 150°, or not to exceed 158°. Maintain this temperature, with occasional stirring, for several hours, or until the whole of the starch is converted (by means of the diastase of the malt) into dextrine and glucose. The absence of starch can be ascertained by the application of Tr. Iodine to a small quantity of the liquor, when, if the starch has been wholly converted, no blue coloration will be evident. Then express the liquor rapidly, and pass it through a strainer. This is the most difficult part of the process, as it speedily clogs the strainer; this can be averted to some extent, by making a pulp by means of water, from common unsized paper, or filtering paper, and mixing this pulp with the expressed liquid, previous to straining. The perfectly clear fluid is finally to be evaporated, by means of a water bath, to the consistence of a thick syrup, having the sp. gr. 1.500, or approximately one pint, weighing 1½ lbs., av.

This extract has an agreeably, syrupy, taste, and contains, besides the sugar of the malt, dextrine, albumen, and the phosphates of the grain. In very hot summer weather it is liable to go into fermentation, but this can be prevented by the addition of a small quantity of glycerin.—*The Pharmacist, Chicago, Nov.*, 1870.

A FEW NOTES ON ALOES.

By William A. Tilden, B.Sc. Lond., F. C. S.,
Demonstrator of Practical Chemistry to the Pharmaceutical Society.

In the list of subjects for investigation issued to the members of the Conference is the following question, No. 176:—"Compound Decoction of Aloes loses bitterness after some time; to what is this due?

Before attempting to answer this question, a few points in the chemistry of aloes require notice.

In the last edition of Pereira's 'Materia Medica' four proximate principles are enumerated as forming the most important constituents of aloes.

1. Aloetin, aloesin, amorphous aloin, bitter principle of aloes.

2. Crystallized or hydrated aloin.
3. Resin.
4. Aloesic acid; supposed by some to be gallic acid.

Experiments made by myself, in addition to those already published by Mr. Groves and other chemists, induced me to adopt an opinion respecting the constitution of aloes somewhat modified from the foregoing.

I. *Aloetin.*—The first of these bodies certainly forms a constituent very important as to quantity of all the varieties of aloes. There can be no doubt that it is the product of the alteration of crystallizable aloin, partly by the action of heat, partly by the oxidizing action of the air. I regard it as a mixture of anhydrous aloin, which is capable in the presence of water of recovering its crystalline condition, and the brown oxidized substance referred to further on.

II. Crystallizable *aloin* is the body to which especially all the varieties of aloes owe their bitterness. Its isolation is usually thought to be a matter of some difficulty, but the following simple process will furnish any desired quantity,—pounds if necessary.

Select a specimen of Barbadoes aloes, the most powerfully odorous that can be procured, bright-looking, and not the most waxy; break it up and dissolve it in a quantity of boiling distilled water, to which a few drops of sulphuric, sulphurous, or hydrochloric acid have been added. The proportions employed may be those of the Pharmacopœia for Extractum Aloes, viz. one pound to a gallon. Let the liquid stand a night to deposit resin, then pour it off and evaporate quickly till, if 1 lb. of aloes have been used, about 2 lbs. of liquid remain.

This left for twenty-four hours will deposit an abundant crop of yellow crystalline matter. The fluid portion poured off and duly concentrated yields a first-rate extract. The yellow crystals must be well drained and pressed, and will yield pure aloin by recrystallization once or twice from water mixed with a small proportion of rectified spirits. If the selection of the aloes be looked to, the product will amount to about 20 per cent. of the material employed.

Aloin has been said to be with great facility decomposed or altered by the simple application of heat to its aqueous or alcoholic solution. I have found, however, that it will bear without appreciable change comparative rough treatment in this way, provided the solution is quite neutral or slightly acidified. A little pure aloin dissolved in distilled water may be evaporated to dryness and heated till it fuses, and then

redissolved in water, and this operation repeated several times, but the aloin undergoes but slight change of color, and will still crystallize on letting the solution stand for an hour or two, or almost immediately on stirring. The transparent yellow varnish left by evaporating solutions of it consists merely of anhydrous aloin; treatment with water restores to it its crystalline state. It is of course already known that if kept in a moist state on a water-bath for some time, the pure substance becomes gradually brown, and assumes the appearance of Socotrine aloes; but this is a comparatively slow process, and even after some time a considerable quantity of the aloin is still capable of crystallizing.

A further illustration of its stability is exhibited in the following experiment and accompanying specimen. About ten years ago, a paper by Kosmann appeared in the *Journal de Pharmacie*, the object of which was to show that aloes was a mixture of glucosidic bodies. The experiments by which grape sugar was obtained, and its presence indicated by the asserted production of alcohol and carbonic acid, were performed by Kosmann solely upon Cape aloes. I have made a number of experiments which convince me that he is quite incorrect in his statements, but as I hope to reproduce the subject at a future meeting, I will cite only one experiment made with pure aloin. Some aloin was dissolved in about an equal weight of oil of vitriol (it forms a clear orange syrup); the solution was gently heated for a few minutes, and then poured into water and kept boiling for about two hours.

Saturated by excess of pure carbonate of barium, filtered and evaporated on a water-bath, a minute quantity of barium retained in solution precipitated by dilute sulphuric acid and the liquid further concentrated, unaltered aloin was deposited in yellow crystals. A part of the solution which had been thus treated was submitted to the fermentation test. Three tubes full of mercury were inverted in a small mercurial trough. Into the first was introduced some washed yeast and distilled water. Into the second some washed yeast and a weak solution of sugar. Into the third some yeast and the boiled solution of aloin. The first and third gave no bubbles of gas larger than a pin's head; the second tube was completely filled with CO_2 in half an hour.

To ascertain if the aloin prevented fermentation, two similar tubes were set up. The first contained yeast, distilled water and sugar; the second had in addition a portion of the solution which had been

boiled and tested as above. Both gave gas in about half an hour nearly equally. A portion of the same sample of yeast was used in all these cases. There is consequently no sugar produced by boiling aloin with acids, and the aloin undergoes practically no change.

The copper test is inapplicable, inasmuch as pure aloin which has ungergone no manipulation reduces alkaline copper solution rapidly and freely.*

Aloin gives no apparent change with tartar emetic nor with ferrous salts, but with ferric salts it strikes an olive coloration, which is destroyed by reducing agents.

III. The substance termed *resin*, which abounds in all kinds of aloes, is not very happily so-called, for it is soluble in considerable quantity in hot water. It is said to yield chrysammic acid by treatment with nitric acid, and is therefore related in some way to the soluble part of aloes; but this is a point upon which nothing is known at present.

IV. There can be no doubt that the "aloesic acid," supposed to be present in aloes, has no existence. The reaction with iron salts, ascribed to it is due to the crystallizable aloin, and the acidity to test-paper presented by an infusion of aloes is a property of the half-oxidized substance contained in the uncrystallizable "aloetin."

V. In addition to those bodies, there is in all aloes a small but notable proportion of vegetable albumen. It is left when either kind is exhausted with rectified spirit. Its presence probably promotes the change to which solutions of aloes are always subject.

Pure aloin, then, in pure solutions, is liable only to very tardy alteration. Exposed to the air, it gradually absorbs oxygen, and the solution deepens in color; but the change which is thus slow under such circumstances, is very rapid indeed if a small quantity of any alkali is introduced. The solution then becomes in a few hours of a deep brown color; and after the lapse of three or four days, if the air be admitted, the aloin entirely disappears, and is transformed into a substance, or mixture of substances, which no longer possesses any bitterness, but is perfectly insipid. An experiment was made by dissolving pure aloin in water with an equal weight of carbonate of potassium; the solution, left in an imperfectly closed flask for about a week,

*I have found that many other bodies besides the glucoses do this; amongst others tannin and orcin.

entirely lost its bitter taste. Nitrate of barium was added to remove the carbonate, and the filtered liquid mixed with acetate of lead. The result was a dirty greenish precipitate, which was removed and basic acetate of lead added. This gave a bright orange precipitate, which was collected and analysed. Its composition, compared with that of aloin, is shown by the subjoined numbers :—

Aloin (Stenhouse).		Yellow Precipitate.	
C....	60·67	C....	14·30
H....	5·65	H....	1·40
O....	33·68	O....	25·71
		Pb ..	58·59
	100·00		100·00

From which it appears that whilst in aloin the carbon stands to the oxygen nearly as 1 to ½, in the oxidized substance it is, roughly speaking, in the proportion of 1 to 2.

Some extract of Socotrine aloes was boiled with carbonate of potash and water, in the proportion directed for the preparation of compound decoction of aloes, the remaining ingredients being omitted. Keeping this solution in the way described, it also became tasteless and gave the same reactions.

Mr. William Young, pharmaceutical chemist, proposed the question which stands in the Conference list, and I am indebted to him for the specimens upon the table, and also for his permission to quote from a letter with which he has favored me.

He says, "For more than ten years I have observed that decoct. aloes co. loses its bitterness on keeping, but I cannot say that it loses its aperient property. I have frequently taken a fluid ounce of various degrees of bitterness, and have always found it produce the desired effect. But this is a matter which does not affect the pharmaceutist so much as the fact that the public cannot be persuaded that a medicine which is not uniform in taste is rightly prepared. I venture to assert that if a customer were to purchase successively at one establishment four ounces of decoct. aloes co. weekly, and each sample being a week older than the one immediately preceding, no two samples would be alike. Of course if, as I understand is the custom in some large establishments, a large quantity is prepared and kept some weeks before use, a greater uniformity would be arrived at; but that puts the small tradesman at a great disadvantage, who perhaps pre-

pares a pint at the time, and sends it out fresh and intensely bitter. I know an instance of a chemist who nearly lost a valuable customer in the following way. He had been in the habit of dispensing a ℥xij mixture, containing ʒvj vini aloes. When he first prepared it he had a pint of the vin. aloes in stock, which probably had been made five or six years, and had not the slightest taste of aloes in it, but it pleased the patient. At length the stock was exhausted, and the mixture prepared with a fresh supply of vin. aloes recently prepared. The patient could hardly be convinced that a mistake had not been made; and it was found that ʒss of the recently-prepared vin. aloes imparted more bitterness to the ℥xij mixture than the whole ʒvj of the old. I have tasted samples of dec. aloes comp. concent. 1 to 8, almost devoid of bitterness; and a maker of that article informs me that it is a most unsatisfactory preparation."

The active constituent of aloes is still unknown. That the purgative property is not due to aloin was first shown by Robiquet, and is proved, I think, by the fact of its complete disuse after a very short trial. Mr. Young says that he has not noticed any variation of power in the specimens of different degrees of bitterness which he has tried; but, on the other hand, I have myself taken large doses of the oxidized alkaline solution of aloin, or of extract of aloes, without perceiving the slightest effect.

There is in Druitt's 'Surgeon's Vade Mecum' a prescription which, I am informed by the author, is the most active form in which any kinds of aloes can be administered. Barbadoes aloes is made into a mass with strong sulphuric acid, and in that state rolled out into pills. Dispensing difficulties may have stood in the way of the more extensive employmont of this form, but if it bears out the character attributed to it, it would seem that a half oxidized condition of the aloes is the most advantageous.

The questions which still remain to be solved with reference to aloes are numerous. Amongst others, two very important points seem to me to require examination. These are the nature and properties of the resinoid matter, and the cause of the differences between the several varieties of this important drug known to commerce.—*Pharm. Journ., London, Nov. 5th*, 1870.

Minutes of the Philadelphia College of Pharmacy.

A special meeting of the College was held Dec. 5th, pursuant to a call issued by the President, to receive and act upon the report of the Joint Committee appointed at the last meeting to consider the business interests of the American Journal of Pharmacy.

In the absence of the President, Vice-President Robert Shoemaker in the chair. In the absence of the Secretary, Thomas S. Wiegand was appointed Secretary *pro tempore.*

The call for the meeting, stating its object, having been read, the minutes of the Joint Committee were then read, giving an account of their deliberations and the conclusions at which they had arrived.

It was then resolved—

1st. That the business pertaining to the Journal shall be transacted at the College building.

2d. That the American Journal of Pharmacy be published monthly.

3d. That a business editor be appointed to attend to the advertisements, the distribution and the accounts.

4th. That the Treasurer of the Publishing Committee be authorized to draw on the Treasurer of the College for the prime cost of Journals supplied to members, and for exchanges.

On motion then adjourned.

THOMAS S. WIEGAND, *Secretary pro temp.*

A stated meeting of the College was held December 27, 1870. Dillwyn Parrish, President, presiding.

The minutes of the last meeting and of the special meeting were read and approved.

The minutes of the Board of Trustees were read by the Secretary of the Board.

Wm. Procter, Jr., for Committee on Latin Labels, made a verbal report. After some explanatory remarks from members of the Committee the subject of publishing farther editions of the labels was referred to the Committee, with power to act.

A communication from the Horticultural Society regarding a botanical garden at Fairmount Park, was referred to the Board of Trustees.

The following communication was read:

To the Philadelphia College of Pharmacy:

FELLOW MEMBERS.—It is now thirty-four years since my connection with the American Journal of Pharmacy as a contributor commenced, and about twenty-five years as co-editor and editor.

During this period time and labor have been freely given to make the work a continuous record of the progress of Pharmacy at home and abroad. For many years it was a labor of love, and despite the great sacrifice of time occasioned by contributing to its pages, the labor was cheerfully given. Of latter years a change has occurred in this respect: the work has been continued

regularly as a matter of duty, but it has ceased to be a pleasure. Under these circumstances, I desire to carry out an intention entertained for several years, and withdraw from the editorship.

In order to give the College time to select a successor, I have deemed it best to offer this my resignation at this meeting, to take effect at the annual meeting in March, when the stated time for electing an editor arrives.

Meanwhile every effort will be made to introduce the new order of things adopted at the special meeting of the present month, and to start the Journal as a *Monthly* in its three first numbers, hoping that the College will then be ready to release me from further duty.

I need hardly say that it has required some effort on my part to thus voluntarily resign a position fraught with so many pleasant memories, and which has brought me in contact with a large number of professional brethren beyond the pale of our College, yet after deliberate consideration I believe duty to myself requires the step to be taken, not doubting that under the auspices of a new editor the Publishing Committee will be able to report a flourishing condition of the Journal at the end of the coming year.

Respectfully,

William Procter, Jr.

December 27th, 1870.

The resignation of the editor of the Journal gave occasion to expressions of regret at the prospect of losing the able hand which had for so many years guided the first and most widely known exponent of Pharmaceutical science in America; and, while feeling what the loss to the College would be, the members who were acquainted with Mr. Procter's earnest wish to be released from the editorship could not solicit from him a farther continuance of the labors of the office, and while accepting his resignation are unable to express their sense of the services he has rendered—a just estimate can better be found in the twenty-one volumes of the American Journal of Pharmacy which bear his name as editor.

On motion of Robert Shoemaker, the resignation of William Procter, Jr., was then accepted.

On motion of Charles Ellis, the Chair appointed the following Committee to bring forward at the next meeting the name of a suitable person for editor, viz., Charles Ellis, Wm. Procter, Jr., John M. Maisch, Charles Bullock.

Frames for the engraving of Jacob Bell, and of the photograph of Plough Court Laboratory, received from Daniel Hanbury, at the last stated meeting, were presented by Wm. Procter, Jr.

On motion then adjourned.

Charles Bullock, *Secretary.*

Minutes of the Pharmaceutical Meetings.

The minutes of the two social meetings hele in November and December will be presented in our February number, and regularly thereafter during their continuance.—Editor.

Editorial Department.

To our Readers.—The present number is the beginning of a new era in the history of this Journal, which hereafter will appear monthly, forming a volume of the same size as heretofore, the text in each number will cover 48 pages, yet by widening and lengthening the page about what is equal to five lines of the old page have been added to each. It will be observed that each page is dated, with the name of the Journal, thus giving the time of publication of every paper printed.

Contributors will much oblige us by sending their copy by the 15th of the month preceding the date of publication, or earlier if convenient. Some of our old contributors have been silent lately. We earnestly invite these and all others to favor us with their investigations and suggestions.

By reference to the Minutes of the College, at page 40, it will be seen that the business management of this Journal will soon be placed in charge of a Special Editor, who will relieve the Editor and Treasurer from labor that did not appertain to their functions. We would also remind our delinquent subscribers that our expenses are incrersed by recent changes, which should be met by the dues which they fail to send us promptly.

Spiritus Salis Dulcis.—A correspondent in New Haven asks for a formula for *Spiritus Salis Dulcis*as, used many years ago. It is a sweet spirit of (common) salt, just as sweet spirit of nitre is of saltpetre. Each was originally made by distilling the respective salts with sulphuric acid and alcohol. This name was officinal in the Edinburgh Pharm. of 1722, and applied to a spirit of hydrochloric ether obtained by distilling a mixture of one part of muriatic acid and three parts of alcohol, after digesting the mixture for several days, and redistilling the product one or more times, until free from acid. This is probably what was used under that name.

In the Prussian Pharm. of 1847 a sort of spirit of chloric ether, under the name *Spiritus Ether Chlorati*, is made by distilling 16 parts of chloride of sodium, 6 parts of binoxide of manganese, 12 parts of sulphuric acid, and 48 parts of stronger alcohol, sp. gr. ·813. The acid and alcohol are to be carefully mixed, and poured on the salt and oxide, previously placed in a large retort, and the whole mixed; a well refrigerated receiver being adapted, forty-two parts of distillate are obtained by means of a sand-bath heat. To free the product from acidity it is shaken with about half a part of calcined magnesia till neutral, and then redistilled. Sp. gr. ·815 to ·820. This product has also been called *Spiritus Salis Dulcis*.

The French use a preparation called *Esprit de sel dulcifié*, which is a simple mixture of 1 part of muriatic acid and 3 parts of alcohol.

Editorial Duty and Selected Matter.—The frequent disregard of Journalistic right on the one hand, and the inconvenience of investigating readers on

the other, are proverbial faults of many American medical and perhaps pharmaceutical editors. During the past year a number of articles properly to be accredited to this Journal have been going the rounds under false colors, and translations and abridgements for which we have paid, are taken without acknowledgement.

While on this subject, we would respectfully suggest to editors the great advantage arising from giving the date, or number and volume of journals from which papers of any consequence are extracted, as well as the original authorities, so the reader can consult them, if for any reason it is desirable.

A General Index to the American Journal of Pharmacy.—It is with pleasure that we announce that arrangements have been made by the Publishing Committee, with a gentleman qualified for the task, to make a general Index to the entire forty-two volumes of this Journal. Commenced in 1829, and for a long period the only journal of its kind in the country, its pages embrace a large number of valuable papers and a great variety of formulas, to which reference will be made in the Index. As the whole will make a volume of several hundred pages, involving considerable expense in its publication, this will have to be met by subscription. Every person possessing a copy of the Journal needs such an index, and those who do not have the back volumes, by possessing the Index can at once learn whether the work contains what they need before seeking its pages elsewhere. The price of the Index cannot yet be determined, but will be placed as low as its cost will admit; meanwhile the names of subscribers are solicited from all interested, as the Committee will not feel justified in going to press, after the copy is ready, until a sufficient number of subscribers is obtained to justify their proceeding.

The Pharmacist.—We learn from the October issue of *The Pharmacist* (which did not arrive until too late for notice in our November number) that a serious loss has been sustained by the destruction by fire of its printer's stock, which occurred on the 4th of September. This misfortune is the more to be regretted as it occurred just as that enterprising journal was getting into good working order. The October and September numbers were somewhat delayed, but Chicago energy will doubtless soon restore its losses, especially if delinquent subscribers will remember the potency of money as a restorative in such misfortunes.

Female Pharmaceutists in Holland.—According to the editor of the *Pharmaceutische Zeitung*, at the examination for pharmaceutical assistants recently held in Amsterdam, nine female candidates made application, five of whom had been educated there at the industrial school. The Commission of examination was fully satisfied of their capability. The *Pharmaceutical Weekly* of Holland reiterates the views expressed on a former occasion, that these girls (Meisjes) are not adapted for city pharmacies, but that in the country, where the prescription business is naturally limited to certain hours, and where they could find time for improvement in domestic duties, they might become useful and valuable assistants.

Mr. Donovan, of Dublin. From the *Medical Press and Circular* of Nov. 30th, we learn that this distinguished apothecary, the last of his order, has retired from his profession in comfortable circumstances. Michael Donovan is an Honorary member of the Philadelphia College of Pharmacy, and has written many papers on pharmaceutical subjects. The editor says of him: "Mr. Donovan's name was familiar to the readers and scientific men of the last half century as the associate and colleague of the first Irish Physicians of his day. Pursuing his well considered course, he persistently refused either to lay claim to medical experience, though immeasurably in advance of most general apothecary practitioners in this respect, or to remove one step either side of the path of science to which he had devoted himself. Far seeing and believing in the greatness of his art, he foretold the virtual extinction of the Irish Apothecaries Company, which has arisen from their abandonment of their proper functions, and alone he maintained a silent and life-long protest against the theory and the policy which regards pharmaceutical chemistry as nothing better than drug selling."

Specific Medication and Specific Medicines. By John Scudder, M. D., Prof. of Practice of Medicine in the Eclectic Medical Institute, Cincinnati. Wilstach, Baldwin & Co., Cincinnati. 1870; pp. 253, 12mo.

This book, written by the editor of the Eclectic Medical Journal, is a new contribution to the literature of the eclectic practitioners. The author gives, in a preliminary chapter, his views on *specific medication*, specific diagnosis, difference from homœopathy, administration of medicines, the form of medicine, the dose and preparation of remedies, office pharmacy and classification of remedies. Four-fifths of the book is occupied with brief therapeutic notices of a long list of the Materia Medica, chiefly, however, indigenous, but not confined to American plants nor to vegetable medicines. Among the "*specific remedies*" the author recommends infusion of honey bees as a diuretic, tincture of cactus grandiflorus in heart disease, collinsonia in ministers' sore throat, gelsemium in affections of the brain and spinal centres, leptandra for the intestinal canal, lobelia in difficult labor, and this he considers a *sedative* between veratrum and aconite. The entire work appears to be Dr. Scudders' opinions and views of the value of the several medicines treated.

Charter, By-Laws and Code of Ethics of the Maryland College of Pharmacy. Baltimore, 1870; pp. 14, 8vo.

The new charter of this institution bears date March 23d, 1870, the old charter expiring by limitation on the 27th inst. The new charter empowers the College to grant the degree of Doctor in Pharmacy. The College in constructing these by-laws have adopted the action of the late Educational Convention. Law X says: "No diploma shall be recognized that is not based upon four years' practical service with some reputable pharmacist." Law V establishes an educational standard for students, who are required to pass an examination before being admitted to the lectures; and Law VII requires the student to be 21 years of age before he can receive his diploma. These more stringent rules will raise the status of Pharmacy in Baltimore, and deserve to be generally adopted.

American Journal of Microscopy, devoted to the general dissemination of the knowledge of microscopic science. Chicago, Vol. 1, No. 1. Published monthly by George Mead & Co., 185 Clark st., Chicago. 16 pages, quarto.

The spirited manner in which the initial number is brought out promises well for this pioneer journal of microscopy in this country. The first article is on "the value of the microscope to the pharmaceutist," by Prof. E. M. Hale, of Chicago, in which the author endeavors to show the need of microscopic scrutiny to detect processes of deterioration set up by fungi in the tissues of organic drugs. As a medium for advocating this important branch of scientific research, this journal will lend valuable aid, and deserves encouragement by all interested. Price one dollar per year, or ten cents per number.

Proceedings of the Second Annual Meeting of the California Pharmaceutical Society, held at San Francisco Oct. 10th, 1870. San Francisco, 1870; pp. 52, octavo.

This pamphlet embodies the several reports made to the Annual Meeting, and the replies to some of the queries propounded at the last Annual Meeting. The Executive Committee's report informs that there are 87 retail drug stores in San Francisco, 48 of which are represented in the Society. The happy influence of the Pacific Railroad, in affording supplies promptly to the drug market, and thus preventing the remarkable variation in prices incident to the ante-railroad era, is alluded to.

The meetings of the Society have been well attended, and a library and museum have been commenced at the new rooms of the Society, at 226 Sutton st. The chapter on Medicinal Plants possesses much interest. Endeavors are being made to establish a garden for the supply of medicinal plants, and the large number of Californian plants in many important natural orders is suggested as a field worthy of culture by the therapeutist and organic chemist. California mineral waters are attracting attention, and allusion is made to an ingenious double cup for dissolving effervescing powders separately, and then mixing them in the enlarged neck of the vessel before drinking.

The subject of a school of pharmacy has been considered, and in the opinion of the Committee seems possible at no distant period.

The address of the President, Mr. Calvert, and the report of the Secretary, Mr. Steele, are interesting, but our space does not admit of noticing them. The special reports we hope to recur to in a future number.

Archives of Science and Transactions of the Orleans County Society of Natural Sciences. Editors, J. M. Currier, M. D., of Newport, Vt., and George A. Hinman, M. D., West Charleston, Vt. Vol. 1, No. 1, October, 1870. Published quarterly by J. M. Currier, M. D., at Newport, Vt. Price $2.50 per annum.

This number contains articles on the Pawnee Indians, on Mineral Waters of Essex County, Vt., on the Indian History of Northern Vermont, Meteorological Register from December, 1869, to July, 1870, inclusive, New Mounting for Microscopic Objects, and a Double Maple-tree (*Acer saccharinum*), together with the Constitution and By-Laws of the Society.

The Manufacturer and Builder for November and December.

This valuable handsomely illustrated monthly is duly received, and contains much of interest in great variety in matters pertaining to machinery and architecture. Among the small items is an arrangement for saving life at sea by cutting a few staves from the bilge of a cask so as to admit a man's body, then by two ropes suspend sufficient weight of iron to retain it with the opening up, so as to float safely. After the navigator gets in, a piece of canvas may be drawn around him, so as to keep the water from entering the cask.

The American Practitioner: a monthly Journal of Medicine and Surgery. Edited by David Y. Yandell, M. D., and Theophilus Parvin, M. D., of the University of Louisville. July, 1870. Vol. 2, No. 7; 64 pages.

This is the first number of this well-printed journal that has reached us.

Annual Report of the Surgeon-General, United States Army, 1870.

Memorandum referring to Extracts of Letters, Reviews and Bibliographical Notices of the Publications of the Surgeon-General's Office.

The reception of these pamphlets from Surgeon-General Barnes is acknowledged.

CATALOGUE

OF THE

Class of the Philadelphia College of Pharmacy,

FOR THE FORTY-NINTH SESSION, 1870–71.

With a List of their Preceptors and Localities.

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Bechtold, Thomas B.	Philadelphia,	Pennsylvania.	Barker, Moore & Mein.
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Bitler, Henry H.	Philadelphia,	Pennsylvania.	Bean & Stevenson.
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